

REMARKS

By this Amendment, a grammatical error on page 5 of the Specification has been corrected to reference that the noted multiple issue blind bidding technique is now disclosed in copending US Application No. 10/022,797, which was published on August 20, 2003 as US 20030163406. An Information Disclosure Statement is also being filed concurrently herewith which formally cites the documents noted in the Specification. For the record, Applicants confirm that the system and method disclosed in US 20030163406 is prior art to the subject application because the system disclosed in that application was publically disclosed on a website at least as early as February 26, 2001, more than one year prior to the Feb. 20, 2003 priority date of the subject application.

With reference to the claim amendments, claim 1 has been substantially amended to clearly distinguish the claimed invention over Applicant Ernest Thiessen's previous patent, US 5,495,412, (hereinafter, "the '412 patent") while dependent claims 2 and 3 are also amended. Claims 6-18 have been cancelled, while new claims 19-24 have been added. The claim coverage of the invention has thereby been simplified to one method claim set including claims 1-5, 19 and 20; and, one apparatus claim set including claims 21-24. For the record, the new claims avoid the objected to language noted in the rejection of claims 15-18 under 35 U.S.C. 112, second paragraph, and inherently render moot the rejection over Applicant Ernest Thiessen's publication entitled Beyond Win Win in Cyberspace since the "and/or" language has been left out of the new claims. A detailed discussion of the changes to the claims will be provided herein following a summary of the key novel features of the claimed invention.

The present invention relates to a computer-based system and method for supporting negotiations with a plurality of variables and any number of parties which represents an improvement over the system and method disclosed in the '412 patent. Common to both the method disclosed in the '412 patent and the subject method is a number of initial steps. Each of the parties in a conflict or dispute to be negotiated first enters their own preferences concerning each decision variable of the negotiation problem into the computer system. They may also enter private variables and/or private constraints if this provides a better problem description. Preference information includes data on satisfaction functions for each of the variables. Each satisfaction function defines a party's relative level of satisfaction as a function of a numerical value for the outcome of that variable. The preference information for each party includes more preferred and less preferred outcomes that define bargaining ranges and a relative importance assigned to each variable with respect to its bargaining range. Bargaining ranges define a region in which a party's satisfaction is defined for feasible packages (sets of values for each variable representing potential agreements) created within those bounds. In the system and method of the '412 patent, for any negotiation problem involving multiple issues or variables to be negotiated, the parties negotiate by exchanging packages containing values for each of the variables. In complex negotiations involving many parties and issues, the negotiation process using the technique disclosed in the '412 patent is preferred to negotiating each issue individually but can still be lengthy and difficult.

The improvement provided by the subject claimed invention has at least two advantages compared to the '412 patent technique. One advantage is that it eliminates complexity by reducing a multivariate problem to one with a single variable. The single

variable that parties negotiate represents a satisfaction rating for an entire package of values for all the variables to the multiple issue negotiation problem. A second advantage is that parties are essentially able to negotiate on the efficiency frontier. When parties begin to negotiate this way with visible reflections, they immediately appear closer together, thus speeding up negotiations. (Note: Negotiating on the efficiency frontier is also theoretically possible with packages but not practical because it gives away too much information about a parties preferences.) To implement this novel technique, the parties to the negotiation are requested to enter a proposed private package of values for each of the variables at the beginning of the negotiation that would represent a satisfactory outcome for that party. In response, the computer assigns a satisfaction rating to each party's proposed package and displays that rating only to the party that entered the package. With the method of the claimed invention, parties implicitly accept all packages with ratings as good or better than the package that each party has indicated as being acceptable. Each party thus only negotiates on this single variable that represents the level of satisfaction associated with the package they are proposing, even though multiple variables are in dispute.

With preferences well-represented, the specified satisfaction rating usually represents many other packages, so this is very powerful. The main advantage of the disclosed system over previous systems such as disclosed in the '412 patent is thus that it enables decision makers to quickly reach an agreement that is both fair and optimal by apparently negotiating with a single variable that represents their satisfaction level with outcomes composed of values for any number and type of variables.

There are two embodiments of the invention disclosed in the subject application and graphically illustrated in Figures 1 and 2, respectively. The first embodiment illustrated in Figure 1 is referred to as visible reflections, while the second embodiment illustrated in Figure 2 is referred to as hidden reflections. In both figures, a two-party negotiation problem is used as an example, the two parties being Party A and Party B. The term “reflections” is employed for the following reasons. Figure 1 shows proposed ratings of A1 from Party A and B1 from Party B. Each "proposal" is reflected off the efficiency frontier and appears to all parties simply as a rating that represents their own individual potential satisfaction. Figure 1 shows the ratings that appear (A2 to Party A and B2 to Party B). When all parties accept a reflected rating that has been proposed to them (Figure 1 shows B2 having been accepted by Party B), then the computer generates a single equivalent agreement package (Package E on Figure 1) that produces for each party a satisfaction rating that is at least as good as the value that they have already accepted. Visible reflections can give negotiators the best of both worlds in this situation, i.e. pointing them to an optimal solution without revealing preferences by showing parties the actual values that would make up that solution. Using a suitable optimization technique, looking at all packages, given the constraints of the problem, the system determines the maximum possible rating that is possible for each party while still allowing the other party to achieve a minimum specified level of satisfaction for them. Each of these maximum possible ratings is proposed to the opposing party. Visible reflections are associated with actual packages. Parties may propose as many visible reflections as they wish, each time making a concession by reducing the minimum rating that they have declared acceptable. When one party declares that a package with the

rating proposed by the other party is acceptable, the system automatically generates a unique equivalent package for both parties that would give them a level of satisfaction at least as great as those ratings that they have each declared to be acceptable.

At this point, the parties now see the actual values for all the variables of the potential agreement package, and it becomes a deal if they confirm their acceptance of that specific package. As in the known method disclosed in the '412 patent, an improvement can then be generated by the computer relative to the accepted package (labeled Improvement on Figures 1 and 2).

The disclosed system also allows the parties to propose a rating in confidence. In this case, the "hidden" reflected ratings are not shown to the other party until it is possible to generate a solution that simultaneously satisfies both parties. A scenario using hidden reflections is shown in Figure 2. Once parties have reached a tentative agreement by any means, parties may request the system to search for an improvement in terms of satisfaction levels for all parties.

In the preferred embodiment, a separate computer system located at a neutral site is provided which communicates with each individual party's computer system to insure maximum security of all party's confidential information. In this case, packages are generated at the neutral site and transmitted back to each party's own computer system. This entire system may be automated in repetitive negotiations in which the computer systems controlled by the parties may derive required input information from simulation models rather than that information having to be explicitly entered each time.

With reference now to the amendments to the claims, claim 1 has been amended to clearly cover the hidden reflections embodiment of Figure 2, while claim 19 has been

added to add the steps necessary to implement the visible reflections embodiment of Figure 1. In both cases, unless all parties to the negotiation problem happen to agree initially to mutually acceptable satisfaction ratings, then the system will ask the parties to agree to a lower acceptable satisfaction rating. This process is repeated until the parties finally agree to satisfaction ratings that allow the computer to generate an equivalent package and reveal the detailed variable values for this package to each of the parties for their review and approval.

The steps of claim 1 that are clearly not disclosed or suggested by the '412 patent or any other references of record include steps d) through g), which recite the negotiation system generating a satisfaction rating for each of the packages entered by the parties; displaying each satisfaction rating to the party that entered the package; each party entering confirmation of their acceptance of the satisfaction rating as defining a level of satisfaction that they are tentatively willing to accept for any packages generated by the negotiation system; if possible, the negotiation system generating an equivalent package to be submitted to each of said parties as a potential agreement to the negotiation problem that provides each party to the negotiation with a satisfaction rating that is equal to or better than the satisfaction rating of each party's proposed package; and, if not possible, the negotiation system requesting one or more times that one or more of the parties enter a lower package satisfaction rating that the party is willing to accept until said negotiation system can generate the equivalent package; and, displaying the values for all of the variables in the equivalent package to each of the parties so that the parties can determine whether they accept the equivalent package as a tentative agreement to the negotiation

problem. New claim 21 also recites these novel features of claim 1 and is an apparatus claim that essentially combines the features of claims 1 and 3.

In addition, claims 19 and 23 add the feature of the visible reflections embodiment to claims 1 and 21, respectively, and specify that the system generates for each proposed package entered by the parties, a satisfaction rating that each package will provide for other parties to the negotiation and displays this satisfaction rating to each of the other parties to the negotiation. Claims 20 and 24 further add that if a proposed package entered by one of the parties generates a satisfaction rating for each of the other parties to the negotiation that is acceptable to each of the other parties, the negotiation system will generate the equivalent package that provides each party to the negotiation with a satisfaction rating that is equal to or better than the satisfaction rating the party has accepted.

Clearly, the above features of claims 1, 19-21, 23 and 24 are neither disclosed or suggested by any the references of record whether taken singly or in combination with one another. For these reasons, Applicants respectfully submit that all of the pending claims are patentable and allowable. In view of the foregoing, Applicants respectfully submit that the application is now in condition for allowance. Accordingly, favorable reconsideration of the application is respectfully requested.

Respectfully Submitted,

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